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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/823,648

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Masanori Ueda

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03/27/2006

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EXAMINER

SUMMONS, BARBARA

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/823,648

Applicant(s)

UEDA ET AL.

Examiner

Barbara Summons

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/8/05.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Withdrawn Claim Rejections - 35 USC §§ 112 and 102***

1. The amendment and arguments received 1/6/06 have overcome all prior § 112 and § 102 rejections, and these rejections have been withdrawn.

### ***Maintained Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-8 and 13-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Taniguchi et al. U.S. 6,404,101 (of record) in view of Noto U.S. 2002/0153970 (of record) for reasons of record repeated below for Applicants' convenience.

Figs. 1, 3 and 8 of Taniguchi et al. disclose a SAW device comprising: a pair of reflectors 26/27 (Fig. 8) on a single crystal piezoelectric substrate 22 (see col. 13, lines

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26-33); three sets of comb electrodes 23-25, each set having two interleaved comb electrodes (23a,23b/24a,24b/25a,25b); and a thick film 17 and 18 formed on a partial area of the bus bars (23c,23d/24c,24d/25c,25d).

Regarding claims 4 and 7, the resonator of Fig. 8 is used as each of the resonators in a ladder filter of Fig.3 (col. 14, lines 39-53). Regarding claims 12 and 13, the electrode fingers are formed of aluminum (col. 13, lines 38-39) and have a thickness of  $0.04\lambda$  (see e.g. col. 19, lines 51-53), and the thick films 17 and 18 on the bus bars have a thickness  $M$ , for example, of between  $0.063\lambda$  and  $0.188\lambda$  (col. 14, lines 4-9) dependent upon the material used as given by the equation at col. 14, line 26 also dependent on the gap  $g$ . Regarding claims 11 and 15, the gap  $g$  (Fig. 1) is the distance from where the thick films 17 and 18 are disposed to the connection end face of the bus bars, and the gap  $g$  is disclosed as small as  $0.1\lambda$  for a thick film formed of an insulating material of silicon dioxide (see col. 16, lines 36-56, especially lines 54-56). Regarding claim 10, the duty of the electrodes (i.e. ratio of electrode width to space there between) is 0.72 (see col. 15, lines 14-15). Regarding claim 14, the thick film can be formed of a heavy metal (see col. 19, lines 18-22) with the thickness  $M_a$  thereof and gap  $g$  fitting the equation utilizing the density given at col. 14, lines 33-38. Regarding claim 16, the device uses a "pseudo" (a.k.a. leaky) surface acoustic wave (see col. 8, lines 65-66).

However, Taniguchi et al. is silent as to the tip gap distance between the ends of the electrode fingers and the end faces of the bus bars, and does not disclose dummy electrodes or a lattice filter.

The Examiner takes Official Notice that a lattice filter would have been an obvious variation known in the art, and that what improvements work for ladder filters also work for the variant lattice filters as evidenced by the prior art of record (see e.g. Figs. 5 and 9 of Ohara).

Noto discloses a tip gap between zero and  $0.3\lambda$  (see section [0050]) as discussed in the prior Office action (see paragraph 7 thereof), and shows a specific example with  $0.2\lambda$  (section 0060)), and discusses that it would have been known to provide the smallest tip gap possible based on the manufacturing method (section [0051]) between the tops of the electrodes and the bus bar or opposing dummy electrodes in order to improve the device response by reducing the amount of free surface and therefore, reducing the generation of surface skimming bulk waves (see e.g. sections [0017]-[0020]).

Consequently, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the SAW device of Taniguchi (Figs. 8 and 3), if even necessary, by having provided the tip gap between the tops of electrode fingers and the end faces of bus bars or the tops of opposing dummy electrodes be not larger than  $0.2\lambda$ , as taught, for example, by Noto (section [0050]), because Taniguchi et al. is silent as to the tip gap, thereby suggesting that any known tip gap would have been usable therewith, and because Noto explicitly suggests a small tip gap including values not greater than  $0.2\lambda$  (sections [0051] and [0060]) and the inclusion of dummy electrodes, in order to reduce free surface which would have provided the benefit of improved device response due to the reduced generation of surface skimming bulk

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waves (see sections [0017]-[0020]). Additionally, one of ordinary skill in the art would have known that what improvements apply to resonators in ladder filters would have equal application to the extremely well known alternative filter arrangement of lattice filters.

***Response to Amendment***

4. The amendment filed on 1/6/06 is confusing since the first two paragraphs under the remarks (page 11 of the amendment) appear to be addressing a totally different case. Also note that the serial number in the upper right margin "10/304,764" is not the serial number of the instant application. However, the arguments do appear to be addressing the issues in this application and are rebutted below.

For the record, claims 1-8 and 10-16 are currently pending in this application.

***Response to Arguments***

5. Applicant's arguments filed 1/6/06 have been fully considered but they are not persuasive.

Applicants argue that "Noto is not concerned with confining acoustic wave energy" and "does not disclose or suggest a thick film thicker than each of the plurality of electrode fingers produced in a partial area of a bus bar, to confine acoustic wave energy"(see page 13, lines 7-10 of the amendment). This argument is not persuasive, because it is the primary reference to Taniguchi that shows this feature and Noto is utilized to provide a modification of Taniguchi (i.e. a tip gap in the recited range).

Applicants argue that the "Office Action asserts that it would have been obvious to have modified the device of Taniguchi with the tip gap of Noto because Taniguchi (is) silent as to the tip gap" and that such "silence" "is an insufficient showing of motivation" (see page 13, lines 10-12 and 16-17 of the amendment). This argument is not persuasive, because The Office Action assertion of Taniguchi's silence as to the tip gap is a suggestion that the tip gap of Taniguchi may already be within the recited range and a suggestion that "any known tip gap would have been usable therewith" (see the rejection repeated above). Furthermore, this was not the only suggestion to combine the references that was provided, as it was also stated in the rejection that Noto explicitly suggests that "a small tip gap" and "the inclusion of dummy electrodes" (see sections 0051] and [0060]), reducing free surface space, would have provided benefits of improved device response and reduced generation of surface skimming bulk waves (see sections [0017]-[0020]), wherein such benefits would have been an explicit suggestion to combine the references to one of ordinary skill in the art, since they provide a desirable result and solve a known problem in the art. However, Applicants conveniently ignored the other reasons to combine focusing only on the "silence" of Taniguchi, and therefore, the argument is not persuasive.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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March 20, 2006



**BARBARA SUMMONS  
PRIMARY EXAMINER**